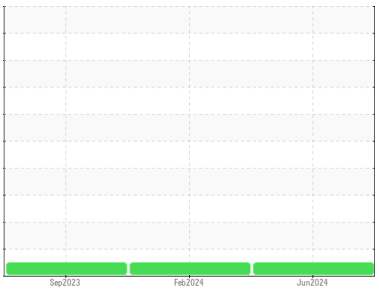
HUTCHENS RENTZ-EDEN

OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
CATERPILLAR STEPHEN T
Component
Starboard Main Engine
Fluid
KENDALL SUPER-D XA 15W40 (--- GAL)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
There is no indication of any contamination in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**HRE0000261**	WC0843961	WC0843994
Sample Date		Client Info		**24 Jun 2024**	23 Feb 2024	22 Sep 2023
Machine Age	hrs	Client Info		**23861**	21084	18419
Oil Age	hrs	Client Info		**500**	500	500
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**NORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	**<1.0**	<1.0	<1.0
Water		WC Method	>0.1	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	**28**	19	7
Chromium	ppm	ASTM D5185m	>10	**<1**	<1	0
Nickel	ppm	ASTM D5185m	>5	**0**	0	0
Titanium	ppm	ASTM D5185m		**52**	63	36
Silver	ppm	ASTM D5185m	>5	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>20	**4**	4	<1
Lead	ppm	ASTM D5185m	>40	**4**	4	<1
Copper	ppm	ASTM D5185m	>300	**10**	6	3
Tin	ppm	ASTM D5185m	>10	**0**	1	<1
Vanadium	ppm	ASTM D5185m		**0**	1	0
Cadmium	ppm	ASTM D5185m		**0**	<1	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	50	**21**	46	88
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**14**	19	36
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	270	**298**	331	212
Calcium	ppm	ASTM D5185m	1900	**2266**	2149	2323
Phosphorus	ppm	ASTM D5185m	1000	**968**	1051	1061
Zinc	ppm	ASTM D5185m	1260	**1140**	1289	1311
Sulfur	ppm	ASTM D5185m	3400	**4221**	4794	4213

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**3**	3	3
Sodium	ppm	ASTM D5185m		**5**	4	3
Potassium	ppm	ASTM D5185m	>20	**2**	3	2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.4**	0.3	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**10.1**	10.4	8.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	**23.3**	23.1	18.6

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**16.9**	18.6	14.0
Base Number (BN)	mg KOH/g	ASTM D2896	9.5	**5.5**	6.5	8.0

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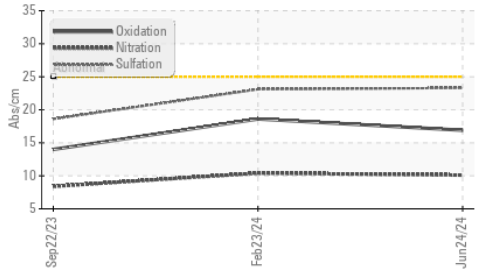
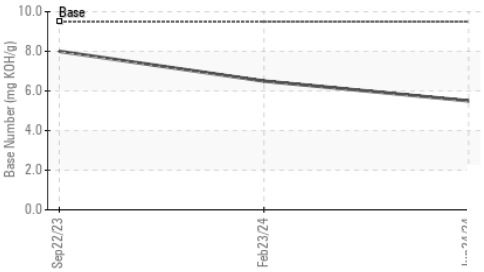
OIL ANALYSIS REPORT

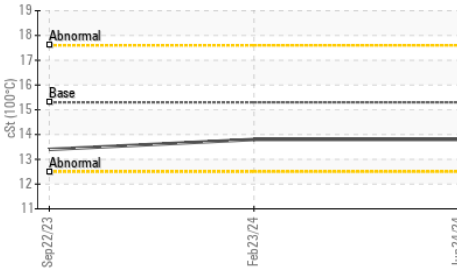
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

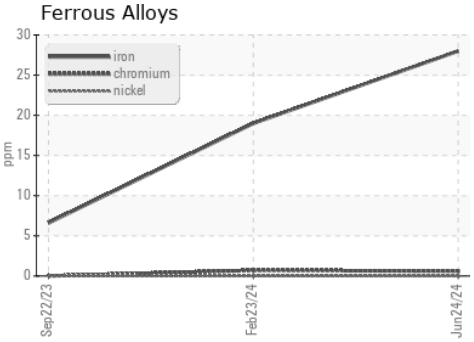


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

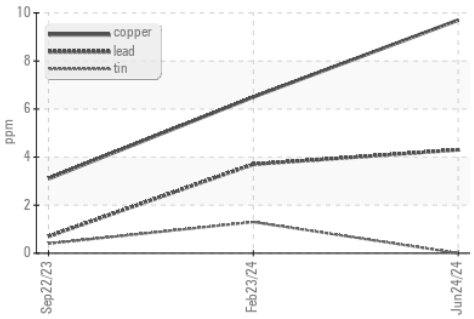
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.3	**13.8**	13.8	13.4

GRAPHS

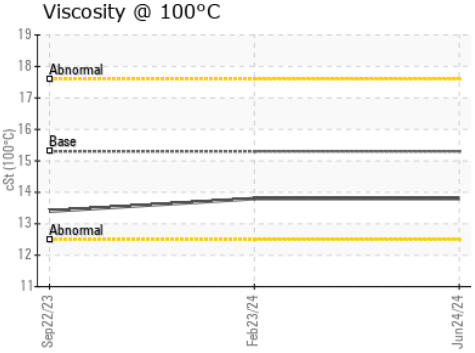
Ferrous Alloys



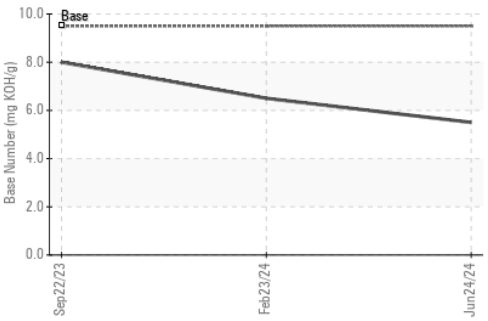
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HRE0000261
Lab Number : 06234365
Unique Number : 11123199
Test Package : FLEET

Received : 11 Jul 2024
Tested : 12 Jul 2024
Diagnosed : 12 Jul 2024 - Wes Davis

To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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